CODE ANALYSIS
APPLICABLE CODES
International Building Code International Mechanical Code International Plumbing Code International Fire Code International Electrical Code International Plumbing Code International Fire Code International Energy Conservation Code Year National Electrical Code Uniform Code for Building Conservation ADA Accessibility Guidelines Guidelines
A. Occupancy and Group: <u>EXISTING CENTRAL BOILER PLANT</u>
Change in Use: Yes NoX Mixed Occupancy: Yes NoX_ Special Use and Occupancy (e.g. High Rise, Covered Mall):BOILER PLANT_
B. Seismic Design Category: Design Wind Speed: N/A mph
C. Type of Construction (circle one): CENTRAL BOILER PLANT - CONCRETE/BRICK $\frac{\mathbf{I}}{A} \qquad \frac{\mathbf{I}}{B} \qquad \frac{\mathbf{II}}{A} \qquad \frac{\mathbf{III}}{B} \qquad \frac{\mathbf{III}}{B} \qquad \frac{\mathbf{IIV}}{B} \qquad \frac{\mathbf{V}}{A} \qquad \frac{\mathbf{V}}{B}$
 D. Fire Resistance Rating Requirements for the Exterior Walls based on the fire separation distance (in hours): North: N/A South: N/A East: N/A West: N/A
E. Mixed Occupancies: X Nonseparated Uses: N/A
F: Sprinklers: NOT PROVIDED - BOILER PLANT
Required: N/A Provided: N/A Type of Sprinkler System: N/A
G: Number of Stories: <u>TWO</u> Building Height: <u>27' FT</u> .
H: Actual Area per Floor (square feet): 143 Sq. FT. UPPER OFFICES/3933 Sq. FT. M.
I: Tabular Area:
a) $A_a = A_t + \left[\frac{A_t I_f}{100}\right] + \left[\frac{A_t I_s}{100}\right]$ $I_f = 100 \left[\frac{F}{P} - 0.25\right] \frac{W}{30}$
b) Sum of the Ratio Calculations for Mixed Occupancies: \[\frac{Actual Area}{Allowable Area} \leq \frac{1}{Allowable Area} \] c) Total Allowable Area for: 1) One Story: 2) Two Story: A _a (2) 3) Three Story: A _a (3) d) Unlimited Area Building: Yes No Code Section: K. Fire Resistance Rating Requirements for Building Elements (hours). N/A
Accombly
Element Hours Assembly Listing Element Hours Assembly Listing Exterior Bearing Walls Interior Bearing Walls Exterior Non-Bearing Walls Structural Frame Partitions - Permanent Fire Barriers Element Hours Assembly Listing Floors - Ceiling Floors Roofs - Ceiling Roofs Exterior Doors and Windows Shaft Enclosures Fire Walls Fire Partitions Smoke Partitions
L. Design Occupant Load: Exit Width Required: Exit Width Required: Exit Width Provided: MAN DOORS-3'-0"
 M. Minimum Number of Required Plumbing Facilities: a) Water Closets - Required (m)1 (f)1 Provided (m)1 (f)1 b) Lavatories - Required (m)1 (f)1 Provided (m)1 (f)1 c) Bath Tubs or howers: 1-BOILER ROOM d) Drinking Fountains: TWOService Sinks:1

SOUTHERN UTAH UNIVERSITY HEAT PLANT CATWALK SYSTEM AND STEAM TUNNEL EMERGENCY LIGHTING DFCM #08110730

PROJECT DOES NOT IMPACT
OR ADD TO THE EXISTING BUILDING
OR TUNNEL. THIS PROJECT SHALL
UPGRADE THE SAFETY FOR MAINTENANCE WORKERS
BY ADDING ACCESS CATWALKS IN THE BOILER
PLANT AND EMERGENCY LIGHTING IN
THE EXISTING STEAM TUNNEL

DRAWING INDEX:

MG001 ---GENERAL NOTES AND LEGEND

E101----STEAM TUNNEL ELECTRICAL SITE PLAN

E401----TUNNEL SECTION LIGHTING PLAN

E402----TUNNEL SECTION LIGHTING PLAN

SE001--GENERAL STRUCTURAL NOTES

MD101- CATWALK DEMOLITION PLAN

M000 ---TITLE SHEET

ME101- CATWALK PLAN

ME501- MECHANICAL DETAILS ME502- MECHANICAL DETAILS

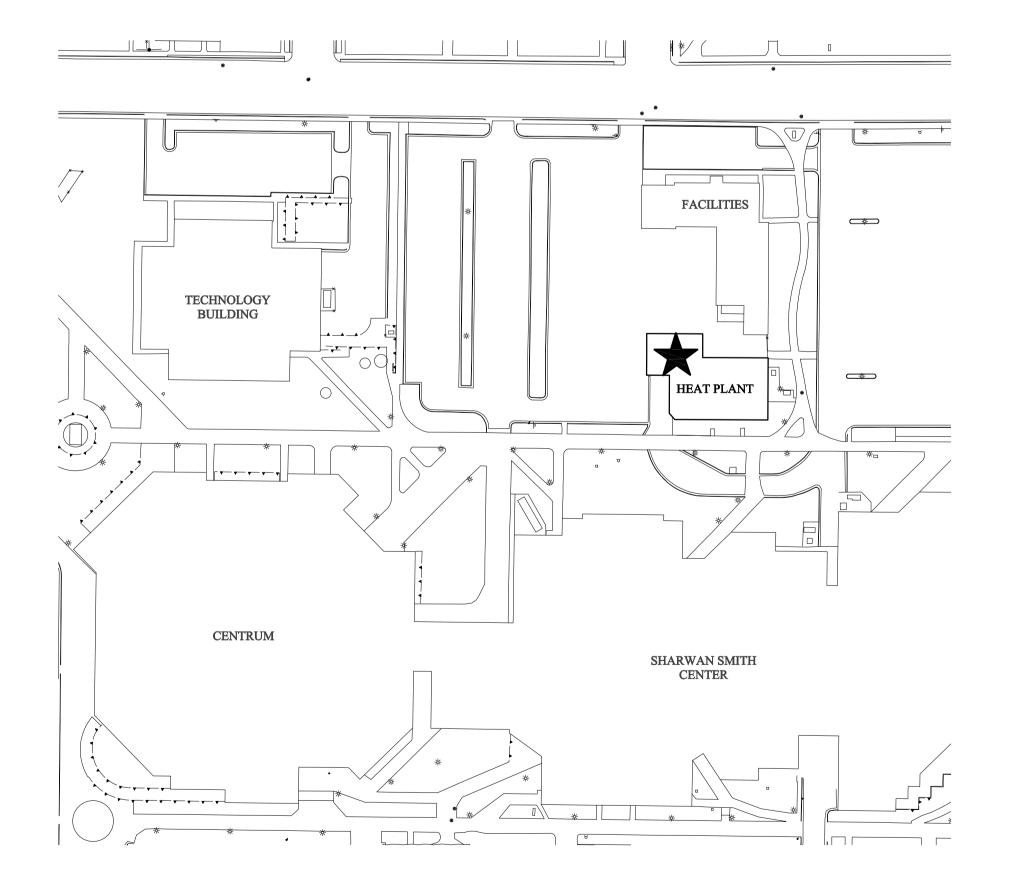
ME503- MECHANICAL DETAILS



State of Utah—Department of Administrative Services

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

4110 State Office Building / Salt Lake City, Utah 84114 / 538-3018



MECHANICAL ENGINEER
WHW ENGINEERING, INC.
8619 SANDY PARKWAY
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PHONE: (801) 466-4021 FAX: (801) 466-8536

ELECTRICAL ENGINEER

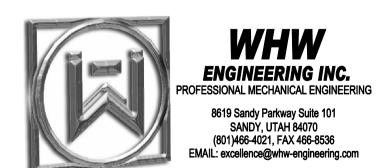
SPECTRUM ENGINEERING

175 SOUTH MAIN

3rd FLOOR

SALT LAKE CITY, UTAH 84111

PHONE: (801) 328-5151 FAX: (801) 328-5155



SPECIAL INSPECTIONS REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION						
VERIFICATION AND INSPECTION	CONTINUOU	PERIODIC	REFERENCED STANDARD	IBS REFERENCE		
I. Material verification of high-strength bolts, nuts, and washers: a. Identification markings to conform to ASTM standards specified in the approved construction documents. b. manufacturer's certificate of compliance required.	-	X	Applicable ASTM material specifications; AISC ASD, Section A3.4; AISC LRFD, Section A3.3	-		
2. Inspecification of high-strength bolting: a. bearing-type connections.	-	X	AISC LRFD Section m2.5	1704.3.3		
B. Material verification of structural steel: a. Identification markings to conform to ASTM standards specified in the approved construction documents. b. Manufacturer's certified mill test reports.	-	-	ASTM A 6 or ASTM A 568 ASTM A 6 OR ASTM A 568	1708.4		
Material verification of weld filler materials:	-	-	ATSC, ASD, Section A3.6; AISC LRFD, Section A3.5	-		
5. inspection of welding: a. Structural steel 1) Complete and partial penetration groove welds. 2) Multi-pass fillet welds. 3) Single-pass fillet welds > $\frac{5}{16}$ ". 4) Single-pass fillet welds < $\frac{5}{16}$ ".	X X X	X	AWS D1.1	1704.3.1		
6. inspection of steel frame joint details for compliance with approved construction documents: a. Details such as bracing and stiffening. b. Member locations. c. Application of joint details at each connection.	-	X	-	1704.3.2		

MECHANICAL LEGEND							
SYMBOL	ABR.	DESCRIPTION					
GENERAL TERMINOLOGY							
A		SECTION LETTER DESIGNATION					
ME-101		SECTION DRAWN ON THIS SHEET					
A2		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION					
1		MECHANICAL EQUIPMENT DESIGNATION					
AH		EQUIPMENT ITEM DESIGNATION					
<u>1</u>		REVISION DESIGNATOR AND NUMBER					
1		KEY NOTE DESIGNATOR AND NUMBER					
•	POC	POINT OF CONNECTION					
	POR	POINT OF REMOVAL					
AFF		ABOVE FINISHED FLOOR					
မူ EL.		CENTER LINE ELEVATION					
GC		GENERAL CONTRACTOR					
МС		MECHANICAL CONTRACTOR					
EC		ELECTRICAL CONTRACTOR					
NIC		NOT IN CONTRACT					
NTS		NOT TO SCALE					
С		COMMON					

GENERAL NOTES:

G-1 MECHANICAL AND STRUCTURAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS BY OTHER DISCIPLINES AND SPECIFICATIONS.

A - EACH DRAWING SHEET AND THE SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN AND NOTED ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH PLACES. ITEMS IN SPECIFICATIONS OR DRAWINGS LISTED WHICH ARE DIFFERING IN EFFICIENCY OR QUALITY SHALL BE HELD TO THE GREATEST OF: EFFICIENCY, QUALITY OR GOVERNING CODE.

B - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.

C - ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.

- G-2 CONTRACTOR AFTER VIEWING THE ACTUAL CONDITIONS AND ALONG WITH THE OWNERS RECOMMENDATIONS, SUBMIT ALTERNATES IF THERE IS A BETTER WAY. ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO CHANGES FOR APPROVAL. CONTRACTOR SHALL NOT START ANY CHANGES UNTIL NOTIFIED IN WRITING. IF CHANGES ARE MADE PRIOR TO APPROVAL CONTRACTOR SHALL TAKE ALL RESPONSIBILITY FOR THE CHANGES MADE AND ALL COSTS RELATING TO FAILURE OR REPLACEMENT OF ALTERATIONS.
- G-3 CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS.
- G-4 THE WORKING DRAWINGS ARE DIAGRAMMATIC. THEY DO NOT SHOW EVERY NECESSITY TO COMPLETE THE INSTALLATION SHOWN. ALL LOCATIONS FOR CATWALKS SHALL BE FIELD VERIFIED AND COORDINATED BETWEEN WHATS SHOWN ON THE DRAWINGS AND WHAT OBSTRUCTIONS MAY BE IN THE WAY. CONTRACTOR IS ALLOWED SOME LATITUDE IN LOCATING AND INSTALLING CATWALKS FOR VALVE ACCESSES. HE MUST FOLLOW PROCEDURES NOTED IN NOTE G-2
- G-5 THE INSTRUCTION TO "PROVIDE" ALSO INCLUDES INSTALLATION.
- G-6 SUPPLIERS SHALL REVIEW ALL DRAWINGS AND THE SPECIFICATIONS PRIOR TO SUBMITTING PRICES TO THE CONTRACTOR. ALL QUESTIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BIDDING.
- G-7 CONTRACTOR SHALL THOROUGHLY REVIEW AND SIGN SUBMITTALS FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS PRIOR TO ENGINEERS REVIEW. SUPPLIERS SHALL HIGHLIGHT OR MARK ALL INFORMATION REQUIRED TO SHOW COMPLIANCE TO THE SPECIFICATIONS. ALL REQUESTED EXCEPTIONS TO THE SPECIFICATIONS, OR SCHEDULES SHALL BE CLEARLY NOTED AND EXPLAINED. SUBMITTAL REVIEW AND ACCEPTANCE IS FOR DESIGN CONCEPT ONLY, AND DOES NOT AT ANY TIME RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO MEET SPECIFICATIONS, CAPACITIES, OR DESIGN INTENT.
- G-8 ALL CONSTRUCTION SHALL BE INSTALLED AND CONFORM TO THE 2006 EDITION OF THE IMC AND IBC WITH UTAH ANNOTATIONS AND LOCAL **AUTHORITY REQUIREMENTS.**
- G-9 ALL STEEL AND MATERIALS, ETC. SHALL BE NEW AND DOMESTIC MADE UNLESS SPECIFICALLY AUTHORIZED IN WRITING PRIOR TO BID.

State of Utah Department of Administrative Services



Division of Facilities Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018 Fax: (801) 538 - 3267

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CONSULTANTS



WHW **ENGINEERING INC.** OFESSIONAL MECHANICAL ENGINEERING 8619 Sandy Parkway Suite 101 SANDY, UTAH 84070 (801)466-4021, FAX 466-8536

PROJECT NAME & ADDRESS

SUU HEAT PLANT CATWALK SYSTEM AND STEAM TUNNEL **EMERGENCY** LIGHTING

DFCM #08110730

Cedar City, Utah

MARK	DATE		RE	EVISION		
DBO IEC	L Γ MANAGE					
PROJEC	I WANAGE VX/D	EK.			-	
1	AAT					

WHW JOB NO.: 08017

MECHANICAL GENERAL

NOTES AND LEGEND

DESIGN CRITERIA

A. GOVERNING BUILDING CODE: 2006 INTERNATIONAL BUILDING CODE (IBC) B. WIND (EXISTING BUILDING)

EARTHWORK

A.CLEARING: THE ENTIRE CATWALK SUPPORT FOOTING AREA SHALL BE CLEARED OF ALL EXISTING STRUCTURES, FOOTINGS, AND OTHER DEBRIS. B. REMOVE: ALL LOOSE MATERIAL FROM BELOW FOOTINGS AND REPLACE IT WITH

COMPACTED STRUCTURAL FILL. PROVIDE A MINIMUM OF 12" OF COMPACTED STRUCTURAL FILL BELOW THE FOOTING.

C. COMPACTED STRUCTURAL FILL: ALL FILL MATERIAL SHALL BE A WELL-GRADED GRANULAR MATERIAL WITH A MAXIMUM SIZE LESS THAN 4 INCHES AND WITH NOT MORE THAN 10 PERCENT PASSING A NO. 200 SIEVE. IT SHALL BE COMPACTED TO 95 PERCENT OF THE MAXIMUM LABORATORY DENSITY AS DETERMINED BY ASTM D1557. ALL FILL SHALL BE TESTED (SEE SPECIFICATIONS AND THE QUALITY ASSURANCE SECTION OF THE GSN.)

III. CONCRETE

A. MATERIALS SHALL COMPLY WITH THE STANDARDS SPECIFIED IN AMERICAN CONCRETE INSTITUTE (ACI) 318-05, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AND SUU STANDARDS."

1. COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS: ..3000 PSI AND 5.5 BAGS.

a. FOOTINGS.. b. ALL OTHER CONDITIONS: 4000 PSI AND 6.0 BAGS.

2. CONCRETE DENSITY (MAXIMUM AIR DRY WEIGHT):

a. NORMAL WEIGHT CONCRETE SHALL BE APPROXIMATELY 145 TO 155 POUNDS PER CUBIC FOOT

b. LIGHTWEIGHT CONCRETE SHALL NOT EXCEED 110 POUNDS PER CUBIC FOOT AND SHALL BE MADE OF LIGHTWEIGHT COARSE AGGREGATES AND A BLEND OF LIGHTWEIGHT AND NORMAL WEIGHT

3. ADMIXTURES:

a. AIR-ENTRAINING ADMIXTURES, COMPLY WITH ASTM C 260 (WHEN USED).

b. CALCIUM CHLORIDE SHALL NOT BE ADDED TO THE CONCRETE MIX. 4. ONLY ONE GRADE OR TYPE OF CONCRETE SHALL BE POURED ON THE SITE AT ANY GIVEN TIME.

B. MATERIALS - SPECIFIC REQUIREMENTS:

REQUIREMENT NOT TO EXCEED 100%.

1. PORTALAND CEMENT: USE TYPE II (MODERATE) CEMENT CONFORMING TO ASTM C 150 LOW ALKALI FOR ALL ON GRADE OR BELOW GRADE INSTALLATIONS. TYPE I MAY BE USED IN ABOVE GRADE CONCRETE WORK WITH APPROVAL FROM FACILITIES MANAGEMENT.

2. AIR ENTRAINMENT: SPECIFY 6-1/4% PLUS OR MINUS 1-1/4%.

3. POZZOLANS: REPLACEMENT ALLOWED UP TO 15% OF CEMENT WITH A 1.5 TO 1 REPLACEMENT RATIO. SPECIFY LOSS OF IGNITION AT LESS THAN 1% AND WATER

4. SYNTHETIC FIBROUS REINFORCEMENT: SPECIFY COLLATED, FIBRILLATED POLYPROPYLENE WITH A MIX RATIO OF 1.5 POUNDS OF FIBER TO 1.0 CUBIC YARDS OF CONCRETE. TO BE USED IN ALL CONCRETE.

5. CURING AND SEALING: SPECIFY A COMBINATION CURING AND SEALING COMPOUND TO BE USED ON ALL EXPOSED CONCRETE FLATWORK COMPLYING WITH THE REQUIREMENTS OF ASTM C 309 AND AASHTO M 148. THE COMPOUND SHALL BE ACRYLIC BASED WITH A MINIMUM OF 18% SOLIDS AND A MOISTURE LOSS OF 0.031 GRAMS PER CUBIC CENTIMETER MAXIMUM AFTER 72 HOURS. SPECIFY A TWO COAT APPLICATION OCCURING IMMEDIATELY AFTER SURFACE WATER DISSIPATION AND CONCRETE FINISHING AND AT APPROX. 28 DAY FROM **PLACEMENT**

C. FORMWORK SHALL COMPLY WITH ACI STANDARDS PUBLICATION 347 AND THE PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN.

DETAILING CARE, PLACEMENT AND REMOVAL OF THE FORMWORK AND SHORES.

D. CONSTRUCTION JOINTS AND CONTROL JOINTS:

1. PROVIDE A CONTINUOUS 2 X 4 KEYWAY OR A SURFACE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" IN ALL WALL FOOTINGS. ADJUST THE KEYWAY AS NECESSARY TO PROVIDE FOR PROPER BAR PLACEMENT. A CONTINUOUS KEYWAY SHALL NOT BE USED FOR CONCRETE SHEAR WALL TO FOOTING SHEAR WALL TO FOOTING CONNECTIONS, UNLESS SPECIFICALLY INDICATED. REFER TO PROJECT PLANS, SCHEDULES AND DETAILS FOR THE SHEAR WALL TO FOOTING CONNECTION REQUIREMENTS.

2. ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHALL HAVE A CONTINUOUS 2 X 4 KEYWAY ALONG THE JOINT OR JOINTS SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" UNLESS NOTED OTHERWISE.

E. SEE CONCRETE IN SPECIFICATIONS.

F. MIX

1. IF SUNROCK MIX-6003C PLUS FIBER. 2. IF WESTERN ROCK MIX-STATE SPECIFIED PLUS FIBER.

G. LINK FOR SUU DESIGN STANDARDS: http://suu.edu/ad/facilities/designstandards IV. STRUCTURAL STEEL

A. MATERIAL

1. W-SHAPES: ASTM A992, (FY = 50KSL), EXCEPT AS NOTED OTHERWISE.

2. ALL OTHER SHAPES AND PLATES: ASTM A36 (FY =36 KSI), EXCEPT AS NOTED

3. RECTANGULAR AND SQUARE HOLLOW STRUCTURAL SECTIONS (HSS): ASTM A500, GRADE B (FY = 46 KSI).

4. ROUND HSS: ASTM A500, GRADE B (FY = 42 KSI).

5. STEEL PIPE: ASTM A53, GRADE B (FY = 35 KSI).

B. FABRICATION AND CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS.

1. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360-05, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," DATED MARCH 9,

2. AISC 341-05, "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS" DATED MARCH 9. 2005, INCLUDING SUPPLEMENT NO. 1, DATED NOVEMBER 16,

3. AISC 303-05, "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" EXCLUDING THE FOLLOWING: SECTION 3.3 (LAST SENTENCE OF FIRST PARAGRAPH), SECTION 4.4, SECTION 4.4.1, SECTION 4.4.2, SECTION 4.5, AND **SECTION 7.13.3.**

4. AISC 358-05. "PREQUALIFIED CONNECTIONS FOR SPECIAL AND INTERMEDIATE STEEL MOMENT FRAMES FOR SEISMIC APPLICATIONS," DATED DECEMBER

5. AISC/RCSC 2004, "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".

6. AMERICAN WELDING SOCIETY (AWS) D1.1-04. "STRUCTURAL WELDING CODE -STEEL" (SPECIFIC ITEMS DO NOT APPLY WHEN THE CONFLICT WITH THE AISC REQUIREMENTS).

7. AMERICAN IRON AND STEEL INSTITUTE (AISI) 2001, "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD- FORMED STEEL STRUCTURAL MEMBERS."

C. STRUCTURAL SHAPES AND PLATES SHALL BE FABRICATED FROM NEWLY ROLLED (MILLED) ONE-PIECE SECTIONS WITHOUT SPLICES.

D. WELDING:

1. CERTIFICATION OF WELDERS. ALL SHOP AND FIELD WELDING SHALL BE EXECUTED BY AWS CERTIFIED WELDERS WHO HAVE BEEN SPECIFICALLY CERTIFIED FOR THE TYPE OF WORK TO BE PERFORMED. CERTIFICATION SHALL BE CONSIDERED CURRENT IF DATED WITHIN THE PAST 12 MONTHS. WELDERS WILL CONSIDERED CERTIFIED IF THEY HAVE BEEN CERTIFIED UNDER AWS AND THEIR WORK RECORDS ARE CURRENT WITHIN EVERY SIX-MONTHS PERIOD THEREAFTER AS REQUIRED BY AWS. CERTIFICATION AND RECORDS MUST COMPLY WITH AWS STANDARDS.

2. MINIMUM WELDS: ALL INTERSECTING STEEL SHAPES THAT ARE NOT BOLTED SHALL BE CONNECTED BY A FILLET WELD ALL AROUND, UNLESS NOTED OTHERWISE. FILLET WELD SIZES THAT ARE NOT SHOWN SHALL BE 1/16" LESS THAN THE THINNEST OF THE CONNECTED PARTS FOR THICKNESSES 1/4" AND LARGER. FILLET WELDS ON PLATES LESS THAN 1/4" SHALL BE OF THE SAME SIZE AS THE THINNEST OF THE CONNECTED PARTS.

3. BOLTS: DO NOT APPLY ANY WELDS, INCLUDING "TACK" WELDS TO BOLTS, INCLUDING ANCHOR BOLTS, EXCEPT AS SPECIFICALLY DETAILED IN THE DRAWINGS.

4. IT IS RECOMMENDED THE STEEL ERECTION CONTRACTOR AND STEEL FABRICATOR CONTACT THE STATE INSPECTION AGENCY PRIOR TO BEGINNING ANY OF THE ABOVE WELDS. A PROGRAM OF JOINT PREPARATION AND WELDING PROCEDURES SHOULD BE WORKED OUT BETWEEN THE PARTIES BEFORE THE WELDING IS STARTED SO THAT CORRECT WELDS WILL BE MADE FROM THE BEGINNING.

E. BOLTED CONNECTIONS:

1. USE ASTM A325N BOLTS FOR STEEL TO STEEL CONNECTIONS, AS NOTED HEREIN OR AS NOTED ON THE DRAWINGS. TIGHTEN BOLTS TO A SNUG TIGHT CONDITION. A SNUG TIGHT CONDITION IS USUALLY ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. BOLTS SHALL BE TIGHTENED UNTIL ALL PLIES OF THE JOINT ARE IN FIRM CONTACT.

2. USE ASTM A325N BOLTS FOR ALL STEEL TO STEEL CONNECTIONS, UNLESS NOTED OTHERWISE. TIGHTEN BOLTS BY THE TURN OF THE NUT, CALIBRATED WRENCH, OR DIRECT TENSION INDICATOR METHOD.

3. PROVIDE HARDENED WASHES BENEATH THE TURNED ELEMENT OF ALL BOLTS OR NUTS. PROVIDE HARDENED BEVELED WASHERS, TO COMPENSATE FOR THE LACK OF PARALLELISM, WHERE THE OUTER FACE OF THE BOLTED PARTS HAS A SLOPE GREATER THAT ONE IN TWENTY WITH RESPECT TO THE PLANE NORMAL TO THE BOLT AXIS. HARDENED WASHERS OR PLATES INSTALLED OVER OVERSIZED HOLES OR SLOTTED HOLES SHALL BE AT LEAST 5/16" THICK AND SHALL CONFORM TO ASTM F436. PLATES OR BARS INSTALLED AT SLOTTED HOLES SHALL HAVE A SIZE SUFFICIENT TO COMPLETELY COVER THE SLOT AFTER INSTALLATION.

4. BOLTS, NUTS AND WASHERS SHALL NOT BE REUSED.

V. SPECIAL INSTRUCTIONS

A. THE PROJECT SPECIFICATIONS ARE NOT SUPERSEDED BY THE GENERAL STRUCTURAL NOTES BUT ARE INTENDED TO BE COMPLEMENTARY TO THEM. CONSULT THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS IN EACH SECTION NOTES AND SPECIFIC DETAILS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAIL.

B. SUBMITTALS: A COPY OF ALL SHOP DRAWINGS THAT HAVE BEEN SUBMITTED FOR REVIEW MUST BE KEPT AT THE CONSTRUCTION SITE FOR REFERENCE. THESE DRAWINGS MUST BEAR THE APPROPRIATE REVIEW STAMPS. THE SHOP DRAWING REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLETING THE PROJECT ACCORDING TO THE CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR SHALL REVIEW AND MARK ALL SHOP DRAWINGS PRIOR TO SUBMITTING THEM TO THE ARCHITECT FOR HIS REVIEW. SHOP DRAWINGS MADE FORM REPRODUCTIONS OF (THESE) CONTRACT DRAWINGS WILL BE REJECTED.

C. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, AND CONDITIONS, IF THE CONTRACT DRAWINGS DO NOT REPRESENT ACTUAL CONDITIONS, CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO FABRICATION OR CONSTRUCTION WITHIN THAT AREA.

VI. QUALITY ASSURANCE

A. SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED FOR THE FOLLOWING **ELEMENTS PER IBC SECTIONS 1704 AND 1707.**

1. CONCRETE AND ELEMENTS EMBEDDED IN CONCRETE SHALL BE SPECIAL INSPECTED PRIOR TO AND DURING PLACEMENT OF CONCRETE. SPECIAL INSPECTION OF CONCRETE SHALL INCLUDE THE FOLLOWING.

a. BOLT AND EMBED SIXE, CONFIGURATION AND PLACEMENT. b. CONCRETE SHALL RECEIVE CONTINUOUS SPECIAL INSPECTION DURING PLACEMENT, AND PERIODIC INSPECTION AFTER PLACEMENT TO ENSURE PROPER CURING.

2. STRUCTURAL STEEL FABRICATION AND ERECTIONS HALL BE SPECIAL INSPECTED. INCLUDING THE FOLLOWING:

a. HIGH STRENGTH BOLTS PER IBC 1704 3.3 AND IBC SECTION

b. FILLET WELDS SMALLER THAN 5/16" PER AWS D1.1.

c. FILLET WELDS LARGER THAN 5/16", MULTIPLE PASS WELDS, AND ALL GROOVE WELDS SHALL RECEIVE CONTINUOUS SPECIAL INSPECTION **DURING WELD PLACEMENT PER AWS D1.1.**

B. STRUCTURAL TESTING: THE FOLLOWING MATERIALS SHALL BE TESTED PER IBC SECTIONS 1704 AND 1708. THE OWNER RESERVES THE RIGHT TO TEST ANY AND ALL MATERIALS USING ANY APPROPRIATE NON-DESTRUCTIVE PROCEDURE. ANY ITEMS FOUND TO BE DEFICIENT SHALL BE CORRECTED AND RETESTED AT NO ADDITIONAL COST TO THE OWNER.

1. EARTHWORK: ALL COMPACTED STRUCTURAL FILL SHALL BE TESTED TO VERIFY SOIL GRADATION, LIFT THICKNESS, AND COMPACTION REQUIREMENTS. SEE THE SPECIFICATIONS AND EARTHWORK SECTION OF THE GSN FOR TESTING

FREQUENCY AND ACCEPTABILITY CRITERIA. 2. CONCRETE STRENGTH VERIFICATION AND TESTING: ALL CONCRETE SHALL BE TESTED TO VERIFY STRENGTH, SLUMP, UNIT WEIGHT, AIR CONTENT, AND TEMPERATURE. SEE SPECIFICATIONS FOR TESTING CRITERIA, TESTING

FREQUENCY AND ACCEPTABILITY CRITERIA. 3. WELDED CONNECTIONS SHALL BE TESTED FOR COMPLIANCE ACCORDING TO IBC TABLE 1704.3. AWS D1.1 AND THE CONTRACT SPECIFICATIONS AND PLANS. AS A MINIMUM, THE TESTING SHALL INCLUDE THE FOLLOWING:

a. ALL COMPLETE PENETRATION GROOVE WELDS SHALL BE TESTED 100 PERCENT EITHER BY ULTRASONIC TESTING OR RADIOGRAPHY.

b. PARTIAL PENETRATION GROOVE WELDS SHALL BE TESTED EITHER BY ULTRASONIC TESTING OR RADIOGRAPHY. A MINIMUM OF 50% OF THESE WELDS SHALL BE TESTED.

c. ANY MATERIAL DISCONTINUITIES SHALL BE ACCEPTED OR REJECTED ON THE BASIS OF THE DEFECT RATING IN ACCORDANCE WITH THE TESTING IN AWS D1.1 CHAPTER 6, EXCLUDING SECTIONS 6.1 THROUGH AND INCLUDING 6.6. ALL DEFICIENT WELDS SHALL BE

CORRECTED AND RETESTED AT NO ADDITIONAL COST TO THE OWNER. C. STRUCTURAL OBSERVATIONS BY THE ENGINEER OF RECORD.

BE DISTRIBUTED TO CONTRACTOR, OWNER, AND QAA. 2. OBSERVATION VISITS TO THE SITE BY THE ENGINEER'S FILED REPRESENTATIVES SHALL NOT CONSTRUED AS INSPECTION OR APPROVAL OF

CRITICAL PHASES OF THE PROJECT. COPIES OF THE ENGINEER'S REPORT WILL

1. THE ENGINEER OF RECORD MAY PERFORM STRUCTURAL OBSERVATIONS AT

CONSTRUCTION. 3. NOTIFICATION OF ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER TWENTY -FOUR HOURS PRIOR TO:

a. PLACING CONCRETE IN ANY FOOTING.

State of Utah Department of Administrative Services



Division of Facilities Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018 Fax: (801) 538 - 3267

Internet: http://www.dfcm.state.ut.us

CONSULTANTS



PROJECT NAME & ADDRESS

SUU HEAT PLANT CATWALK SYSTEM AND STEAM TUNNEL **EMERGENCY LIGHTING DFCM #08110730**

Cedar City, Utah

REVISION

PROJECT	MANAGE	ER:				
	PROJECT	PROJECT MANAGE	PROJECT MANAGER:	PROJECT MANAGER:	PROJECT MANAGER:	PROJECT MANAGER:

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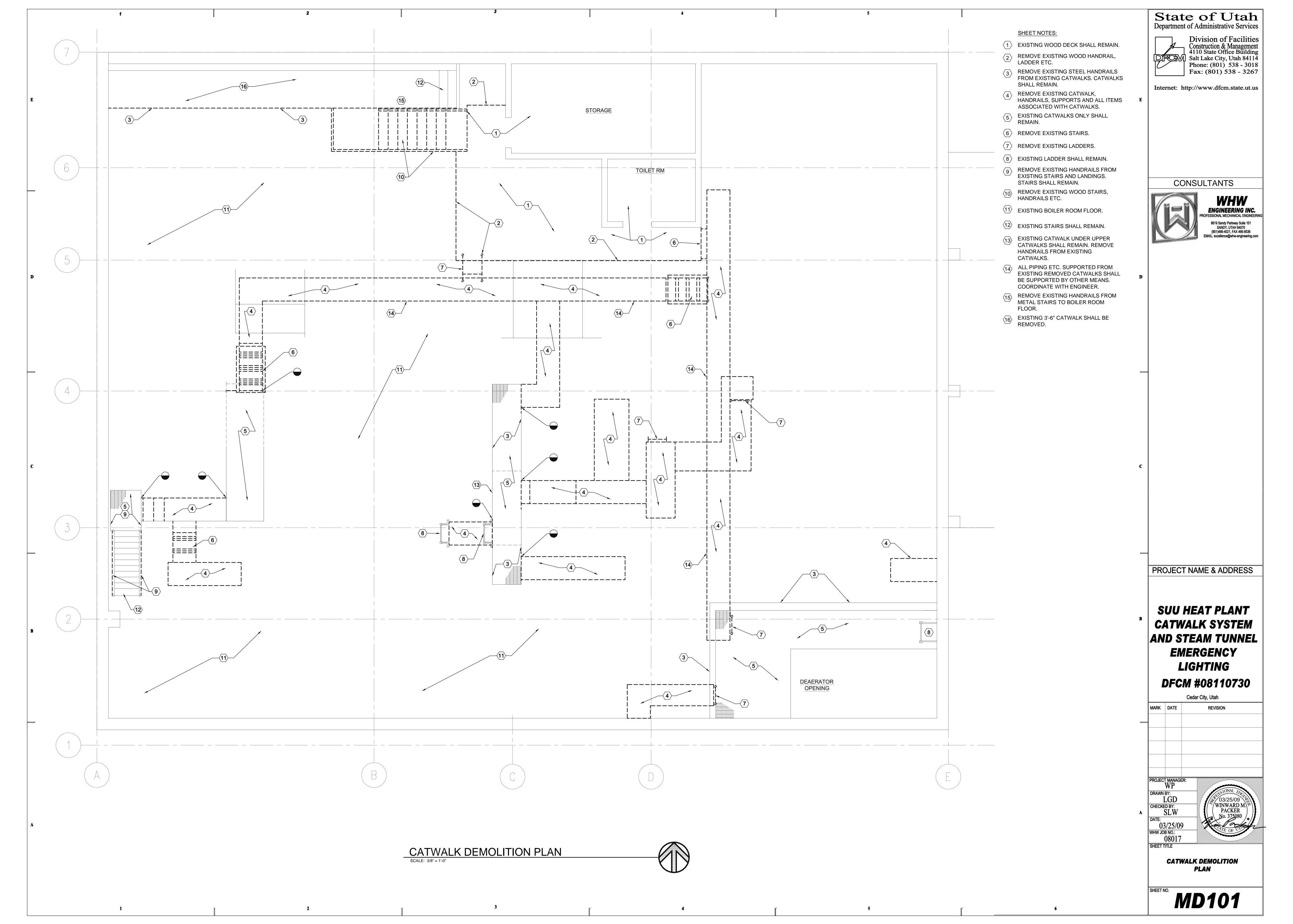
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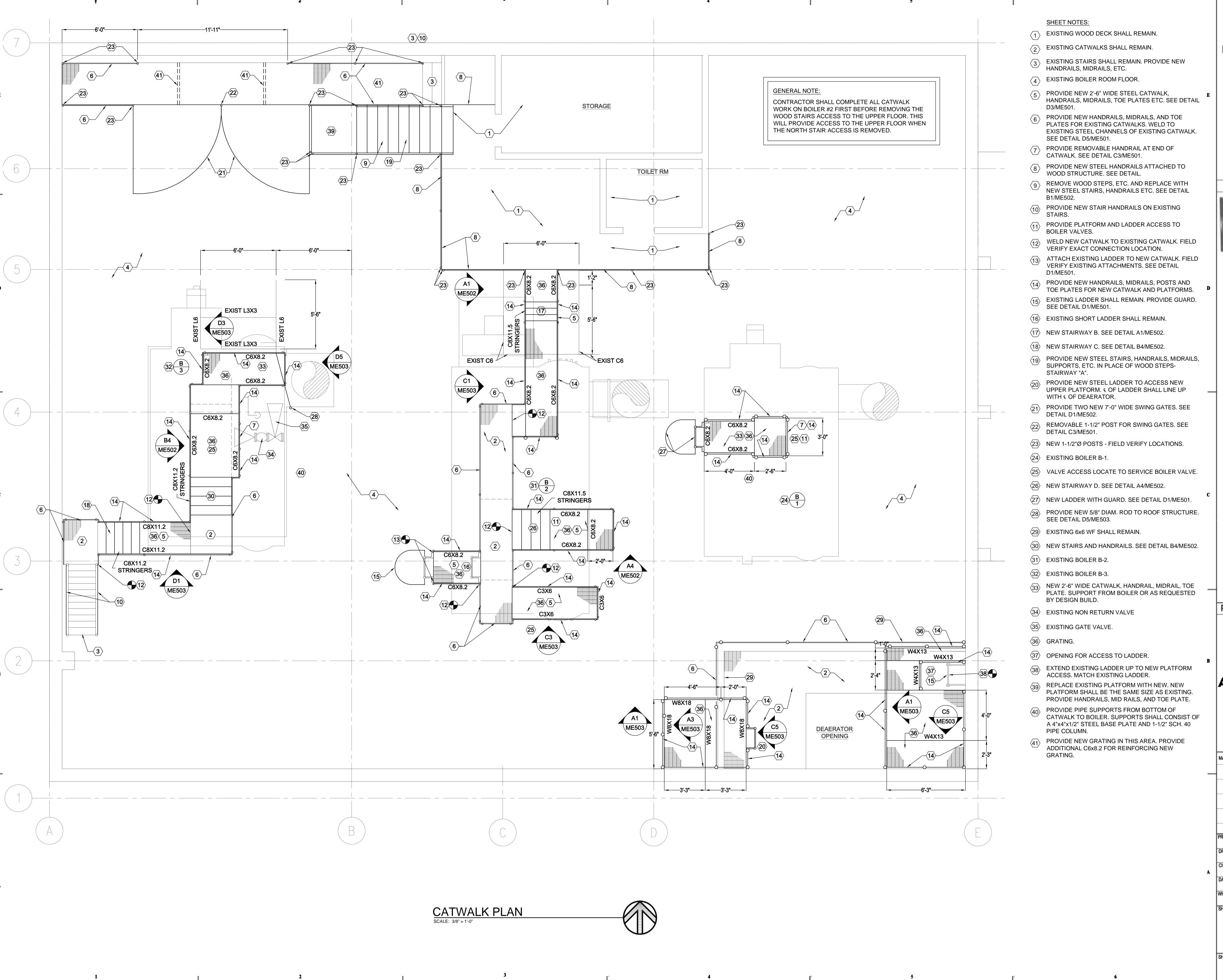
WHW JOB NO.

GENERAL STRUCTURAL

NOTES

SE001





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CONSULTANTS



WHW **ENGINEERING INC.** ESSIONAL MECHANICAL ENGINEERI

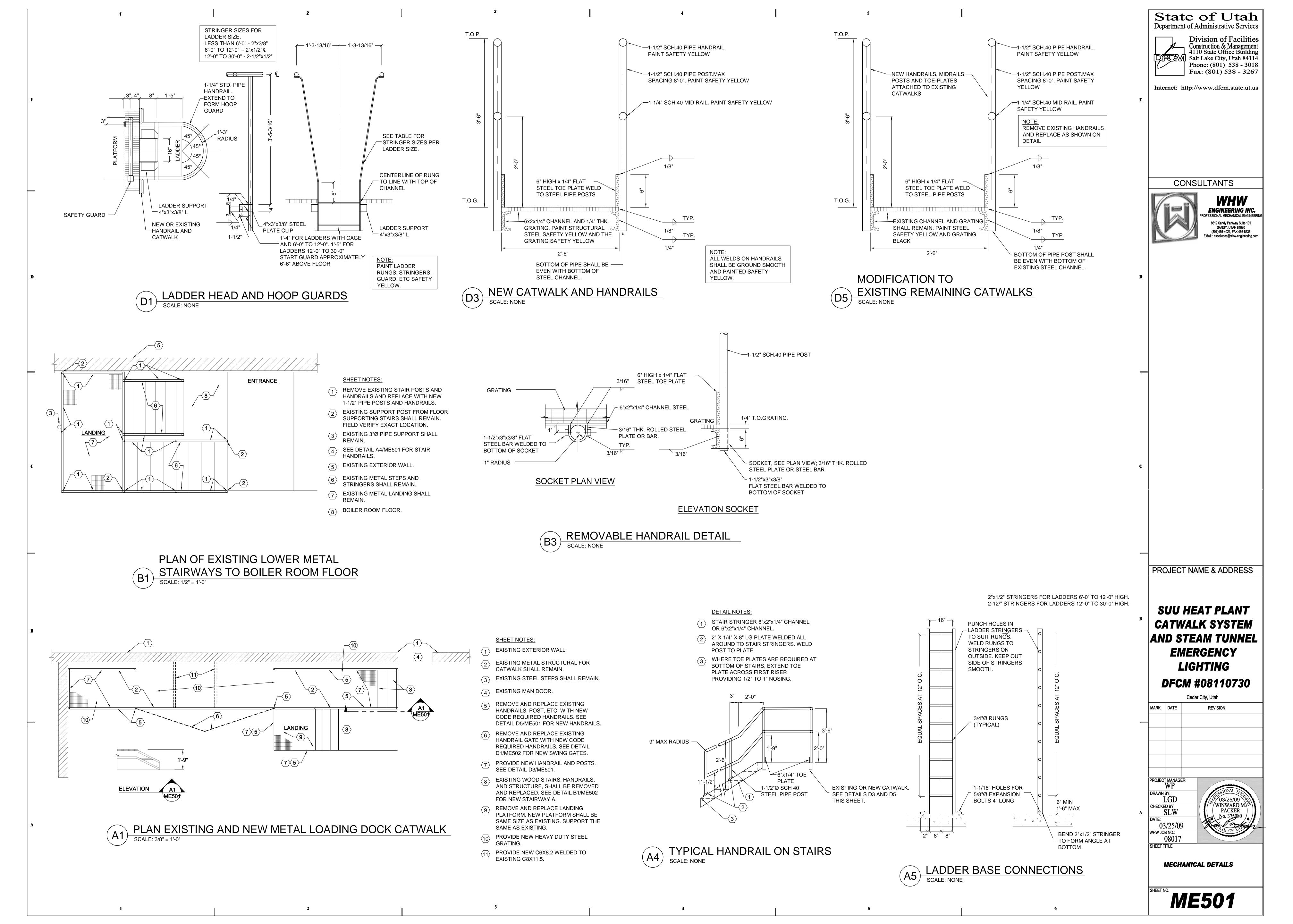
PROJECT NAME & ADDRESS

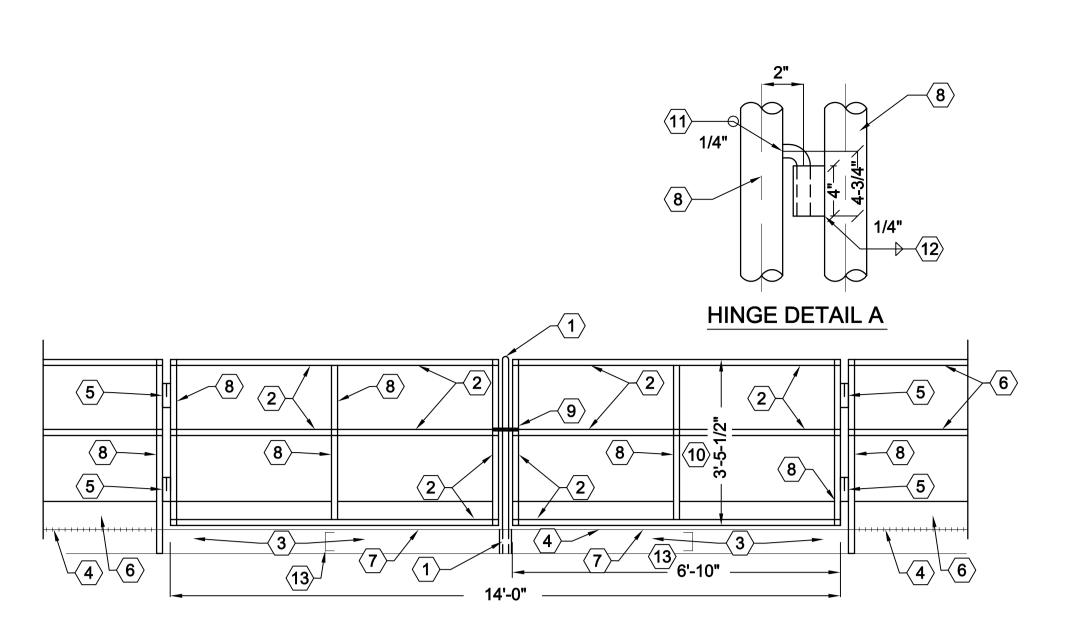
SUU HEAT PLANT CATWALK SYSTEM AND STEAM TUNNEL **EMERGENCY** LIGHTING **DFCM** #08110730

Cedar City, Utah REVISION

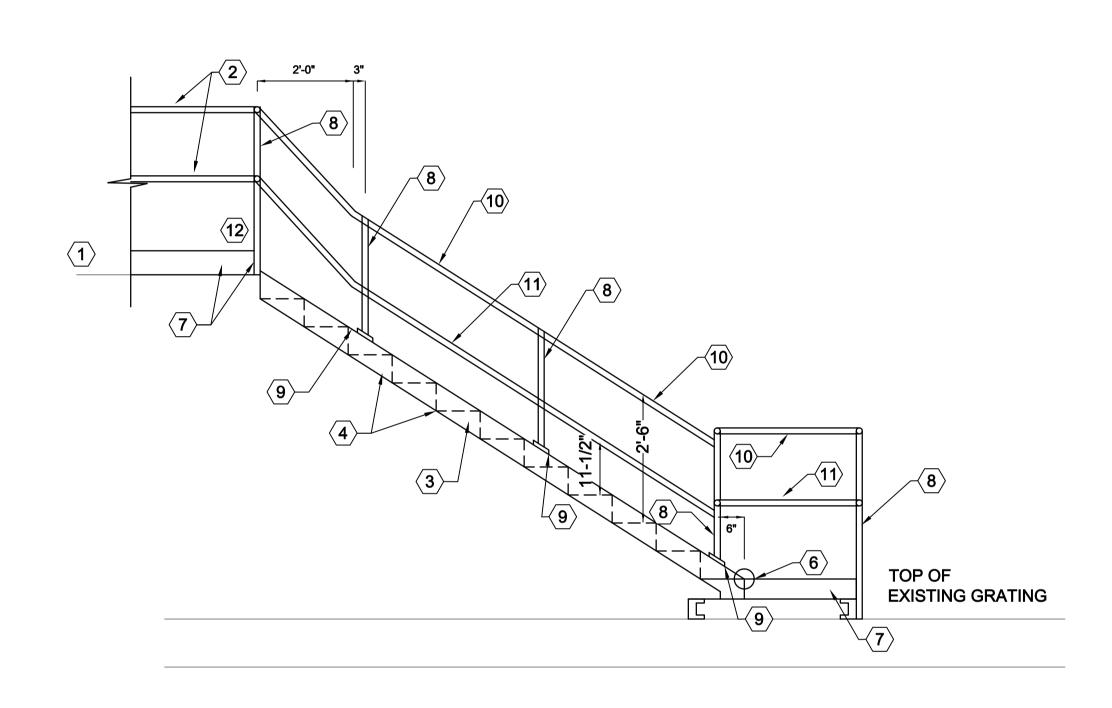
CATWALK PLAN

ME101

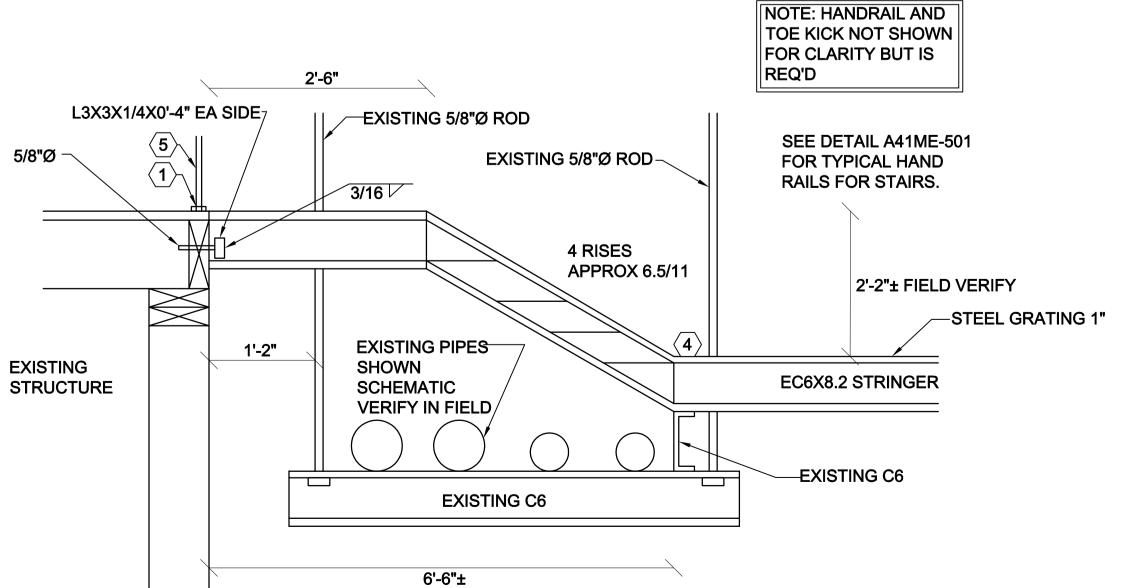




SECTION NEW SWING GATE SCALE: 1/2" = 1'-0"



SECTION NEW STAIRWAY A SCALE: 1/2" = 1'-0"



SECTION NEW STAIRWAY B

SHEET NOTES:

- 1-1/2"Ø SCHEDULE 40 STEEL REMOVABLE PIPE. SEE DETAILC3/ME501..
- STEEL GATE MADE FROM 1-1/2"Ø SCH. 40 STEEL PIPE AND 1-1/4" SCH. 40 STEEL MIDRAIL AND 6"x1/4" STEEL TOE PLATE.
- (3) EXISTING C8"x2"X1/4" STEEL CHANNEL CATWALK SHALL REMAIN.
- $\langle 4 \rangle$ EXISTING CATWALK GRADING SHALL BE REMOVED AND REPLACED WITH 1" GRATING.
- HINGE TYPICAL BOTH GATES. SEE DETAIL A
- NEW HANDRAILS, MIDRAILS, TOE PLATE ETC. FOR EXISTING CATWALK. SEE SHEET ME101 AND DETAIL D5/ME501.
- PROVIDE 1/2" CLEARANCE BETWEEN BOTTOM OF GATES AND TOP OF GRATING. GATE ONLY.
- $\langle 8 \rangle$ 1-1/2"Ø SCH. 40 STEEL PIPE POSTS.
- PROVIDE STEEL LATCHES TO ATTACH, HOLD, AND RELEASE GATES FROM
- $\langle 10 \rangle$ OUTSIDE TO OUTSIDE DIMENSION.
- WELD 1"Ø STEEL ROD TO GATE POST.
- WELD 1"x4"AG SCH. 40 PIPE TO HANDRAIL POST. RUN WELD THE FULL
- PROVIDE C6X2X1/4 AND WELD TO **EXISTING C8X6.2 STRINGER MIDWAY** BETWEEN GATES.

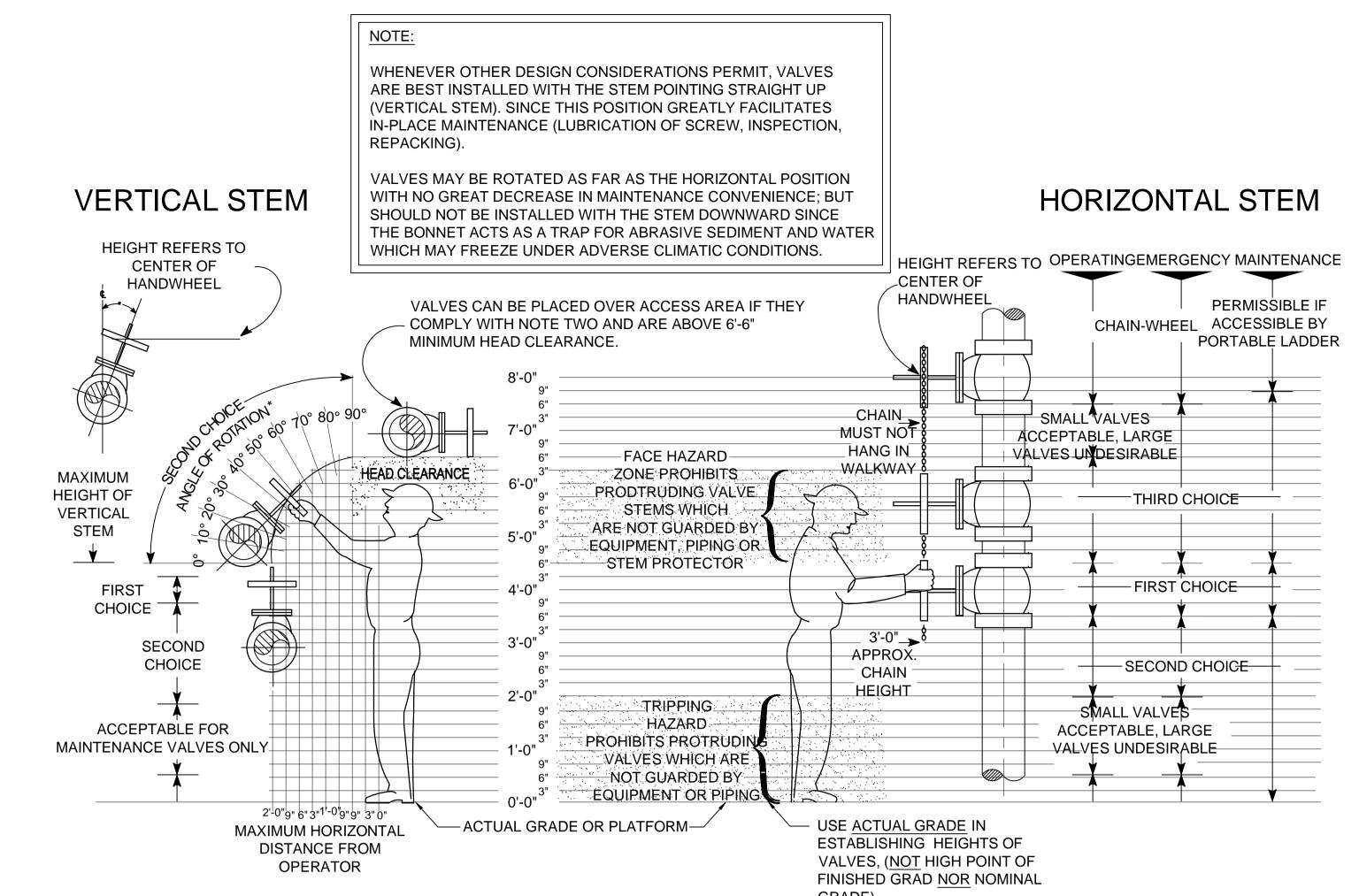
SHEET NOTES:

- TOP OF EXISTING WOOD DECK.
- NEW STEEL HANDRAIL ON EXISTING
- WOOD DECK. SEE DETAIL A1/ME502.
- $\langle 3 \rangle$ NEW 8"x2"x1/4" CHANNEL STRINGER.
- NEW STEEL PLATE STAIRS WELD TO STRINGER. TYPICAL.
- NEW STEEL PLATFORM AND HANDRAILS. SEE DETAIL D3/ME501. SAME SIZE AS EXISTING.
- $\langle 6 \rangle$ EXTEND TOE PLATE ACROSS FIRST RISER PROVIDING 1/2" TO 1" NOSING.
- $\langle 7 \rangle$ 6"X1/4" TOE PLATE.
- $\langle 8 \rangle$ 1-1/2"Ø SCH. 40 STEEL PIPE POSTS. WELD TO STEEL PLATE.
- 2x8x1/4" LONG STEEL PLATE ON TOP OF STRINGER. WELD TO STRINGER ALL AROUND.
- (10) 1-1/2"Ø SCH. 40 STEEL HANDRAIL.
- (11) 1-1/4"Ø SCH. 40 STEEL MIDRAIL.
- PROVIDE 4"X4"X1/2" PLATE AT ALL HANDRAIL POSTS. BOLT TO WOOD DECK. WELD 1-1/2" DIAM POST TO BASE

DETAIL NOTES:

TO 1" NOSING.

- (1) 4"x4"x1/2" STEEL PLATE BOLTED TO WOOD DECK WITH TWO 5/8"Ø BOLTS
- (2) NEW CATWALK, HANDRAIL, MID-RAIL AND TOE PLATE. SEE DETAIL D3/ME501
- NEW STEEL STAIRS WITH FOUR 6.5
- RISERS AND 11" STAIR TREADS. EXTEND TOE PLATE FROM CATWALK ACROSS FIRST RISER PROVIDING 1/2"
- $\langle 5 \rangle$ NEW HANDRAIL, MID-RAIL, AND TOE PLATE FOR WOOD PLATFORM.
- 6 FIELD VERIFY ELEVATIONS AND ADJUST STAIRS AS NEEDED.



VALVE ACCESS DETAIL SCALE: NONE

⊘ 3/16 /∕

18" CAP

SECTION A-A

C6X8.2

2'-0"

-1-1/2"Ø PIPE

-C6X8.2

SECTION B-B

SEE DETAILD3/ME501 FOR

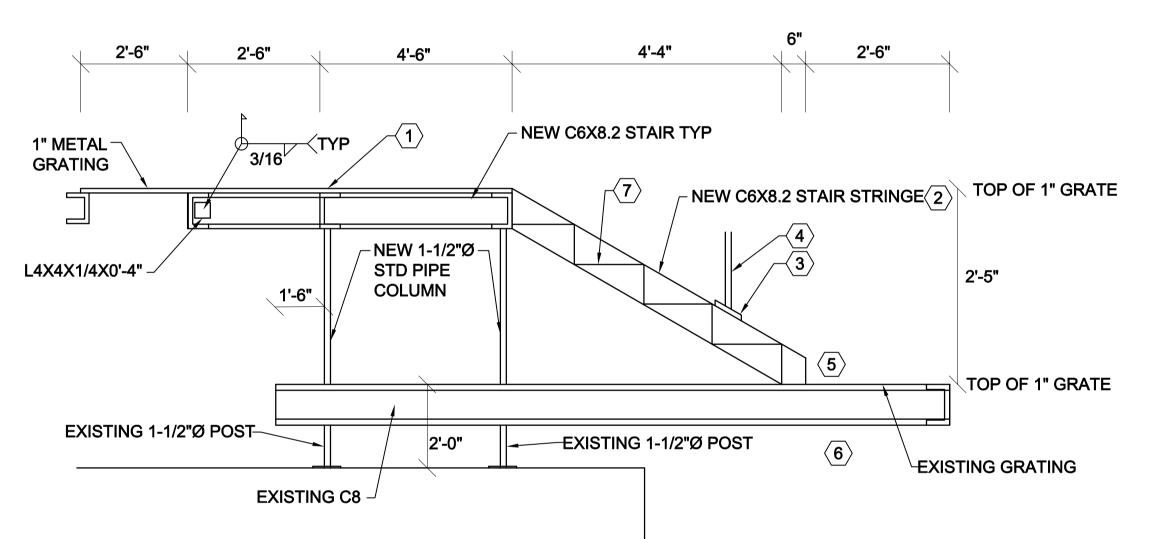
TYPICAL HANDRAIL DETAIL

EXISTING L2-1/2X2-1/2

-1-1/2"Ø STD PIPE

- TOP OF BOILER

EXISTING L2-1/2X2-1/2X3/16



1" GRATING -

1-1/2"Ø -

2'-1"±

EXISTING BOILER

STRUCTURE

5'-0"± FIELD VERIFY

STD PIPE

---(3-12 \) **3-12**

┌1" GRATING

C6X8.2 STRINGER

SECTION NEW STAIRWAY C

EXISTING BOILER

SCALE: 3/4" = 1'-0"

—SEE DETAIL A4/ME501

4 RISES

HANDRAIL FOR STAIRS

APPROX 6.5/11

FOR TYPICAL

STRUCTURE

NOTE: HANDRAIL AND

FOR CLARITY BUT IS

REQ'D

EXISTING C3—

1/2"X4"X0'-4" -

STEEL PLATE

1-1/2"Ø STD PIPE-

EXISTING GRATE -

TOE KICK NOT SHOWN

SHEET NOTES:

- NEW CATWALK, HANDRAILS, MIDRAILS, AND TOE PLATE. SEE DETAIL D3/ME501.
- NEW C6X8.2 STEEL CHANNEL
- STRINGERS.
- 3 2"x8"x1/4" STEEL PLATE WELD ALL AROUND TO NEW POSTS. WELD STEEL POSTS TO PLATE. SEE DETAIL
- 4 1-1/2"Ø SCH. 40 STEEL POST
- NEW HANDRAIL, MIDRAIL AND TOE PLATE ATTACHED TO EXISTING PLATFORM. SEE DETAIL D5/ME501.
- 6 EXTEND TOE PLATE ACROSS FIRST RISER, PROVIDING 1/2" TO 1" NOSING.
- $\overline{7}$ 11" LONG STEEL STAIR TREADS WELD TO 8"x2" CHANNEL.

PROJECT NAME & ADDRESS

State of Utah

Department of Administrative Services

Salt Lake City, Utah 84114

Internet: http://www.dfcm.state.ut.us

CONSULTANTS

WHW

ENGINEERING INC.

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8619 Sandy Parkway Suite 101 SANDY, UTAH 84070 (801)466-4021, FAX 466-8536

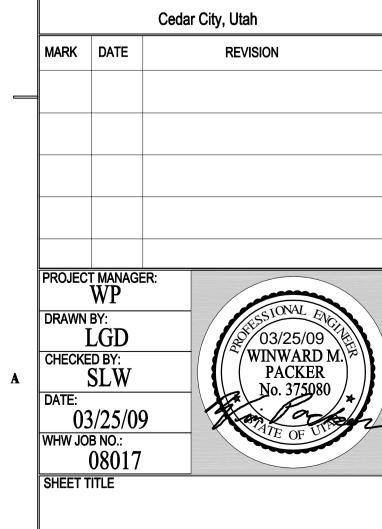
Division of Facilities

Construction & Management 4110 State Office Building

Phone: (801) 538 - 3018

Fax: (801) 538 - 3267

SUU HEAT PLANT **CATWALK SYSTEM** AND STEAM TUNNEL **EMERGENCY LIGHTING DFCM** #08110730



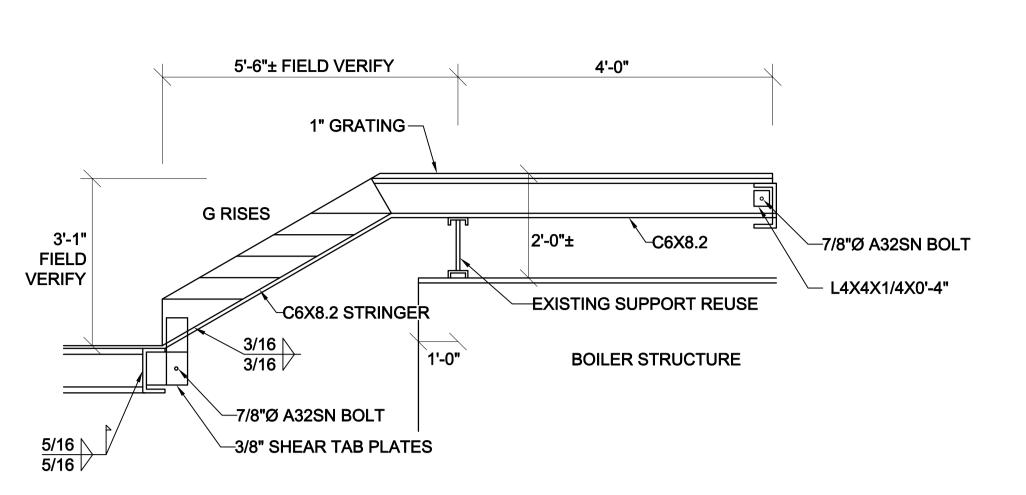
SECTION NEW STAIRWAY D SCALE: 1/2" = 1'-0"

DETAIL NOTES: EXTEND TOE PLATE FROM CATWALK ACROSS FIRST RISER PROVIDING 1/2" TO 1" NOSING.

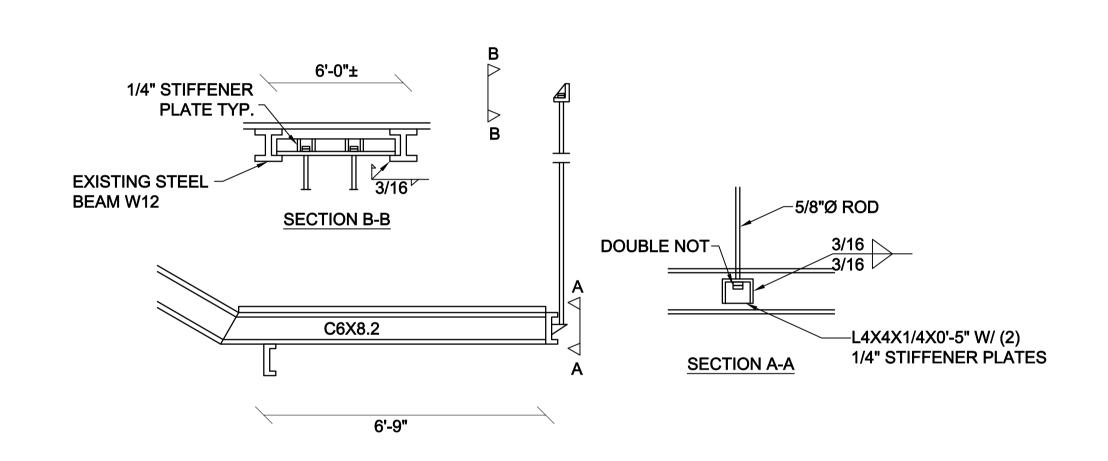
 $\langle 2 \rangle$ 6-3/4 RISER AND 11" TREAD TYPICAL. FIELD VERIFY.

MECHANICAL DETAILS

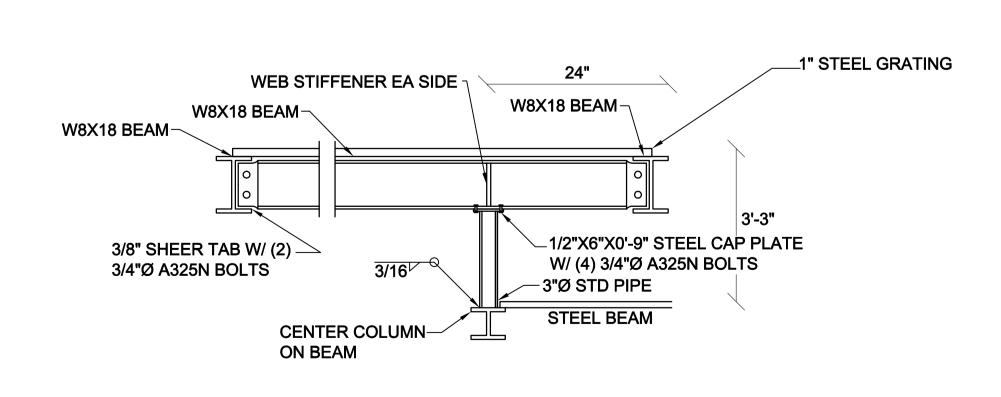
ME502



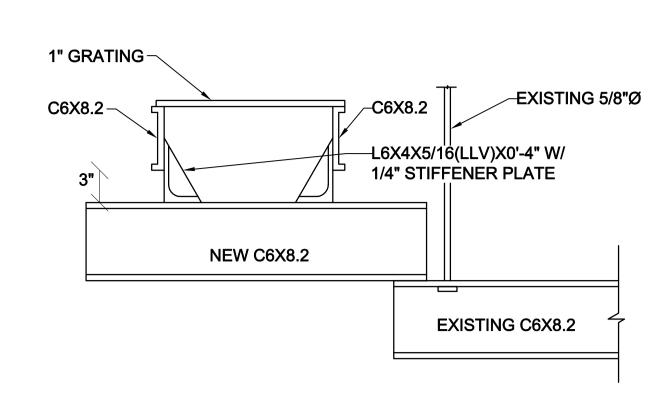
STRUCTURAL DETAIL



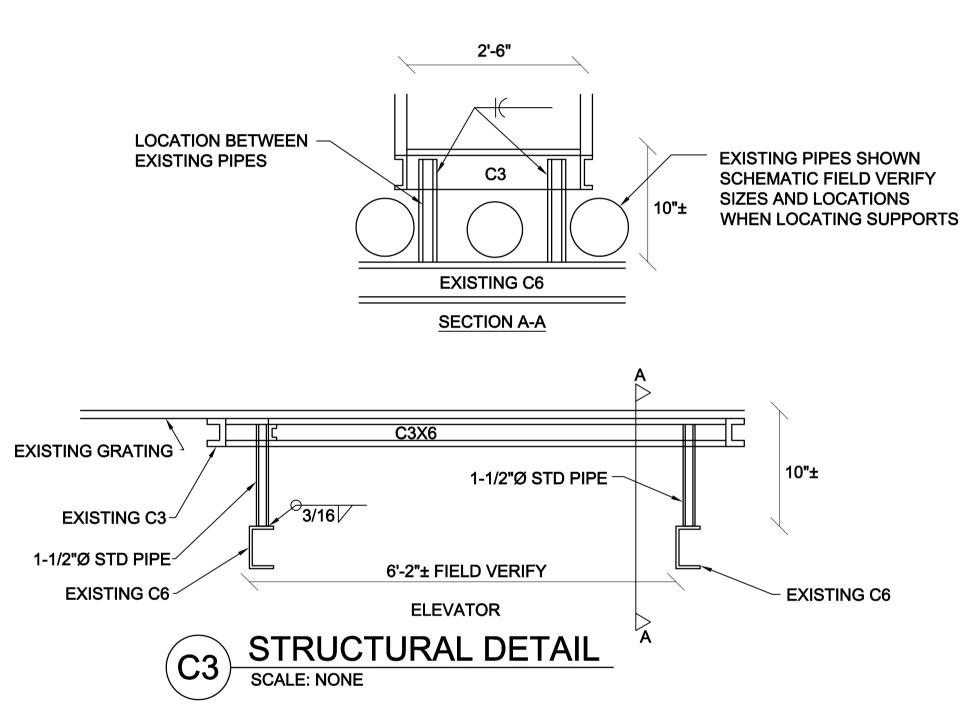
STRUCTURAL DETAIL

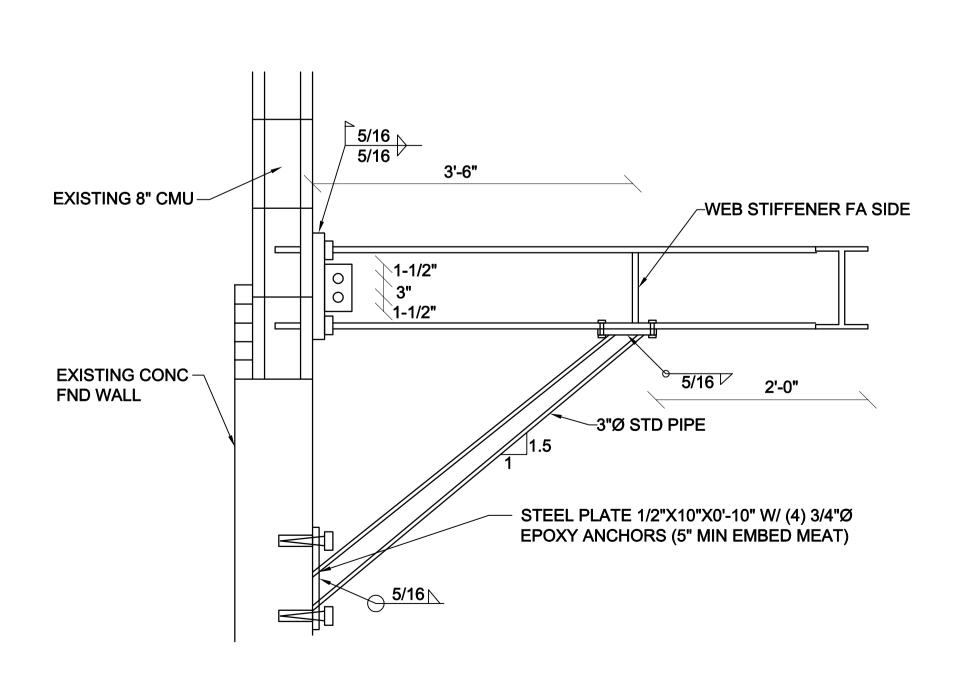


STRUCTURAL DETAIL

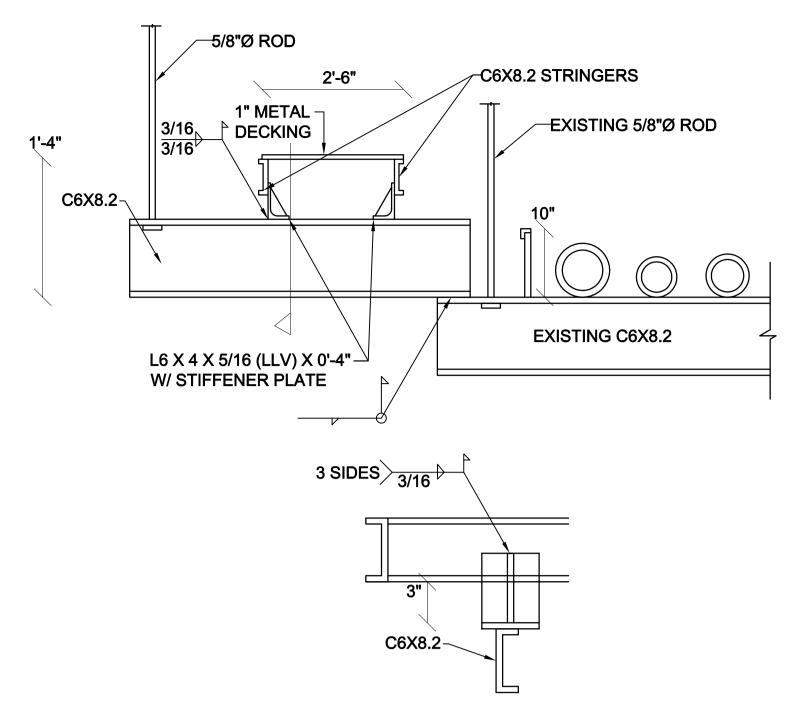


STRUCTURAL DETAIL

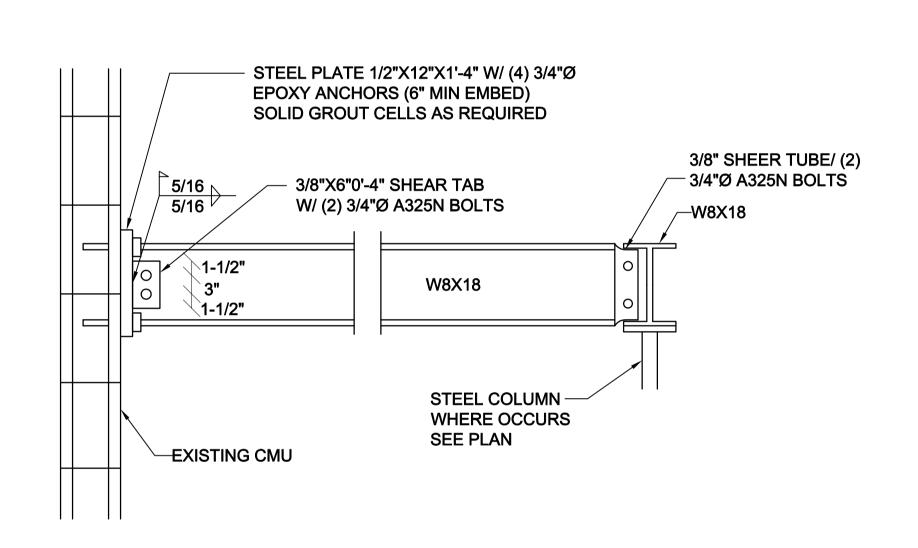




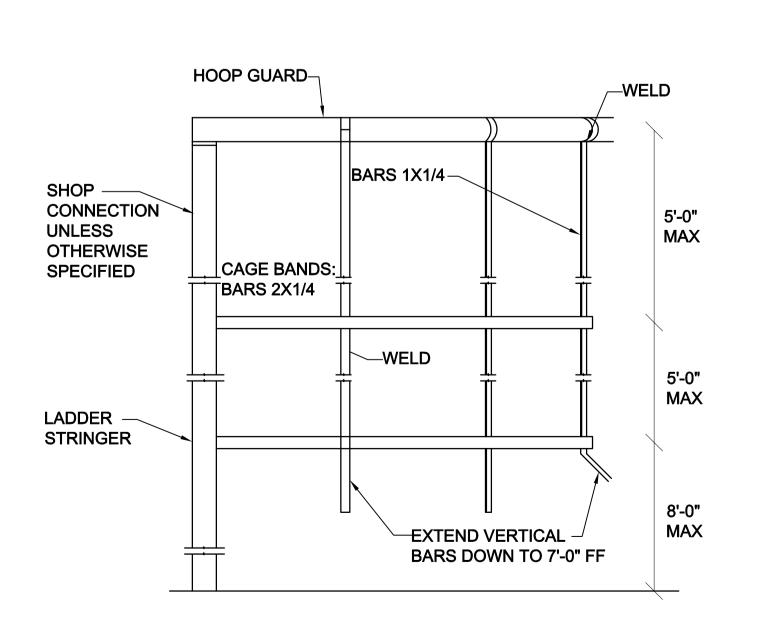




STRUCTURAL DETAIL



STRUCTURAL DETAIL



STRUCTURAL DETAIL
SCALE: NONE

State of Utah
Department of Administrative Services

Division of Facilities Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018 Fax: (801) 538 - 3267

Internet: http://www.dfcm.state.ut.us

CONSULTANTS



PROJECT NAME & ADDRESS

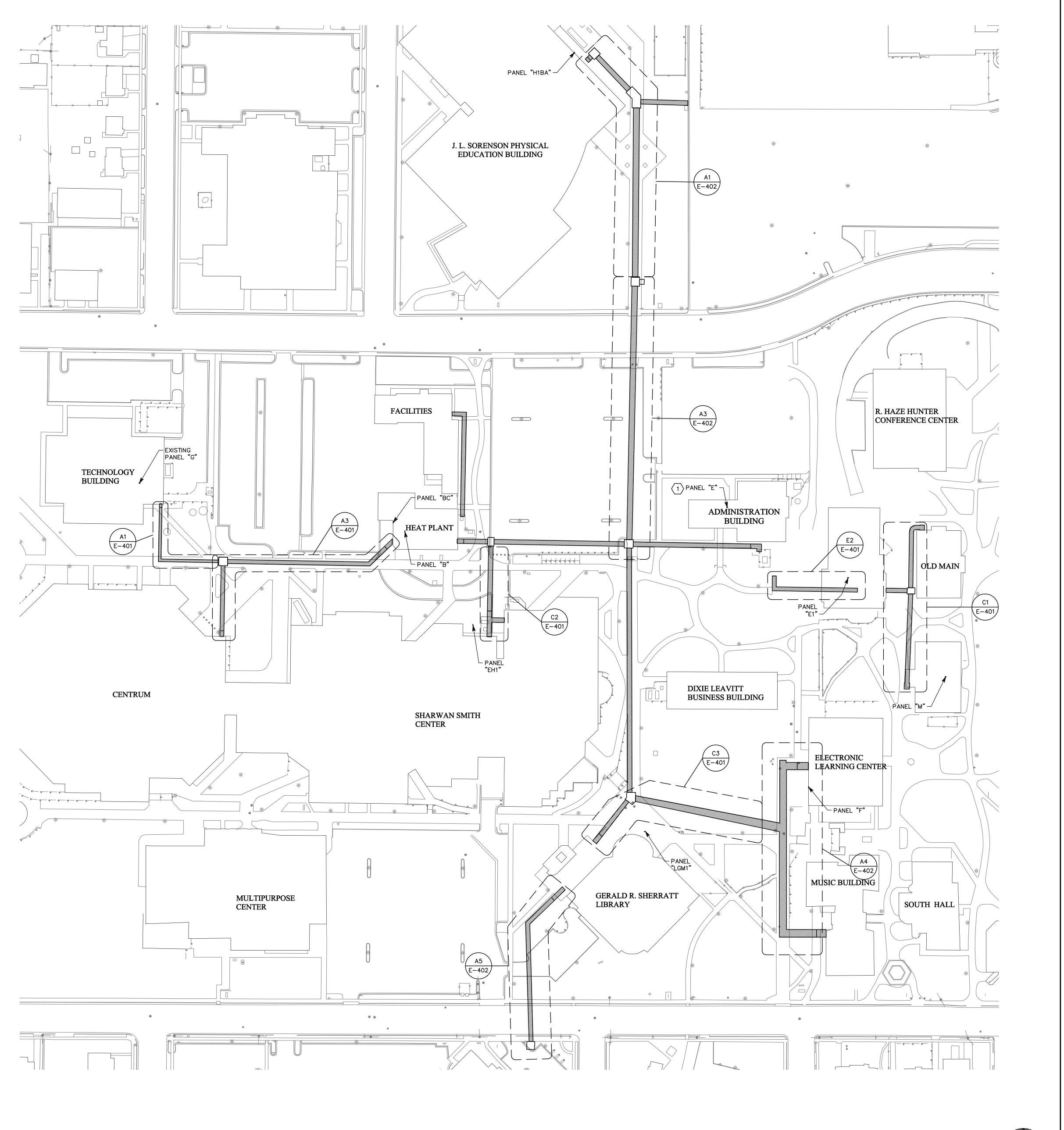
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Cedar City, Utah MARK DATE REVISION

03/25/09 WHW JOB NO.: 08017

MECHANICAL DETAILS

ME503



STEAM TUNNEL ELECTRICAL SITE PLAN

SCALE: 1/64"=1"-0"

○SHEET KEYNOTES

1. EXTEND EXISTING 1.5" CND FROM EDGE OF TEACHER'S EDUCATION BUILDING TO PANEL "E". DISCONNECT EXISTING FEEDER TO PANEL "E" (DISTRIBUTION PANEL FEEDING PANEL "E" IS APPROXIMATELY 10' AWAY). IN TEACHER'S EDUCATION BUILDING, EXTEND EXISTING SPARE 1.5" CND FROM PANEL "Q1" TO PANEL "E1" LOCATED IN SAME ELECTRICAL ROOM, APPROXIMATELY 10' AWAY. PROVIDE NEW 100/3 DISCONNECT WITH 70A FUSES IN TEACHER'S EDUCATION BUILDING PANEL "E1" AND FEED PANEL "E" IN ADMINISTRATION FROM THIS FUSED DISCONNECT WITH 4 #2, #6 G, 1.5" CND.

State of Utah
Department of Administrative Services Division of Facilities



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SUU HEAT PLANT CATWALK SYSTEM AND STEAM TUNNEL **EMERGENCY** LIGHTING **DFCM #08110730**

Cedar City, Utah

MARK	DATE		RE	VISION		
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STEAM TUNNEL **ELECTRICAL SITE PLAN**

E-101

